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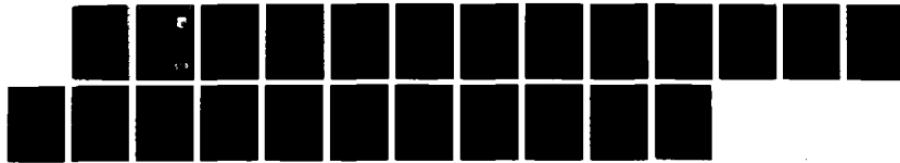
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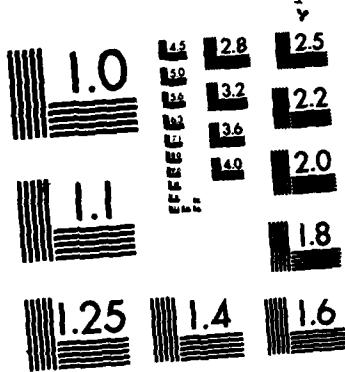
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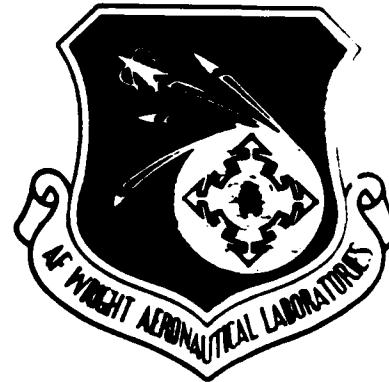
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AFWAL-TR-86-4006
Volume III
Part 12



**INTEGRATED INFORMATION
SUPPORT SYSTEM (IISS)**
Volume III - IISS Configuration Management
Part 12 - IBM Installation Guide

**General Electric Company
Production Resources Consulting
One River Road
Schenectady, New York 12345**

Final Report for Period 22 September 1980 - 31 July 1985

November 1985

Approved for public release; distribution is unlimited.

**MATERIALS LABORATORY
AIR FORCE WRIGHT AERONAUTICAL LABORATORIES
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This report has been reviewed by the Office of Public Affairs (ASD/PA) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.


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AFWAL/MLTC
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DATE

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The Integrated Information Support System is a test computing environment used to investigate and demonstrate and test the concepts of information management and information integration in the contexts of aerospace manufacturing. Specifically, IISS addresses the problems of integration of data resident on heterogeneous databases supported by heterogeneous computers, interconnected via a Local Area Network. A common Data Model is maintained and provides the mechanism required to integrate the data.

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PREFACE

This installation guide covers the work performed under Air Force Contract F33615-80-C-5155 (ICAM Project 6201). This contract is sponsored by the Materials Laboratory, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. It was administered under the technical direction of Mr. Gerald C. Shumaker, ICAM Program Manager, Manufacturing Technology Division, through Project Manager, Mr. David Judson. The Prime Contractor was Production Resources Consulting of the General Electric Company, Schenectady, New York, under the direction of Mr. Allan Rubenstein. The General Electric Project Manager was Mr. Myron Hurlbut of Industrial Automation Systems Department, Albany, New York.

Certain work aimed at improving Test Bed Technology has been performed by other contracts with Project 6201 performing integrating functions. This work consisted of enhancements to Test Bed software and establishment and operation of Test Bed hardware and communications for developers and other users. Documentation relating to the Test Bed from all of these contractors and projects have been integrated under Project 6201 for publication and treatment as an integrated set of documents. The particular contributors to each document are noted on the Report Documentation Page (DD1473). A listing and description of the entire project documentation system and how they are related is contained in document FTR620100001, Project Overview.

The subcontractors and their contributing activities were as follows:

TASK 4.2

<u>Subcontractors</u>	<u>Role</u>
Boeing Military Aircraft Company (BMAC)	Reviewer
D. Appleton Company (DACOM)	Responsible for IDEF support, state-of-the-art literature search
General Dynamics/ Ft. Worth	Responsible for factory view function and information models

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<u>Subcontractors</u>	<u>Role</u>
Illinois Institute of Technology	Responsible for factory view function research (IITRI) and information models of small and medium-size business
North American Rockwell	Reviewer
Northrop Corporation	Responsible for factory view function and information models
Pritsker and Associates	Responsible for IDEF2 support
SofTech	Responsible for IDEF0 support

TASKS 4.3 - 4.9 (TEST BED)

<u>Subcontractors</u>	<u>Role</u>
Boeing Military Aircraft Company (BMAC)	Responsible for consultation on applications of the technology and on IBM computer technology.
Computer Technology Associates (CTA)	Assisted in the areas of communications systems, system design and integration methodology, and design of the Network Transaction Manager.
Control Data Corporation (CDC)	Responsible for the Common Data Model (CDM) implementation and part of the CDM design (shared with DACOM).
D. Appleton Company (DACOM)	Responsible for the overall CDM Subsystem design integration and test plan, as well as part of the design of the CDM (shared with CDC). DACOM also developed the Integration Methodology and did the schema mappings for the Application Subsystems.

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Subcontractors

Digital Equipment Corporation (DEC)

McDonnell Douglas Automation Company (McAuto)

On-Line Software International (OSI)

Rath and Strong Systems Products (RSSP) (In 1985 became McCormack & Dodge)

SofTech, Inc.

Software Performance Engineering (SPE)

Structural Dynamics Research Corporation (SDRC)

Subcontractors and other prime contractors under other projects who have contributed to Test Bed Technology, their contributing activities and responsible projects are as follows:

Subcontractors

General Dynamics/
Ft. Worth

Role

Responsible for factory view

Role

Consulting and support of the performance testing and on DEC software and computer systems operation.

Responsible for the support and enhancements to the Network Transaction Manager Subsystem during 1984/1985 period.

Responsible for programming the Communications Subsystem on the IBM and for consulting on the IBM.

Responsible for assistance in the implementation and use of the MRP II package (PIOS) that they supplied.

Responsible for the design and implementation of the Network Transaction Manager (NTM) in 1981/1984 period.

Responsible for directing the work on performance evaluation and analysis.

Responsible for the User Interface and Virtual Terminal Interface Subsystems.

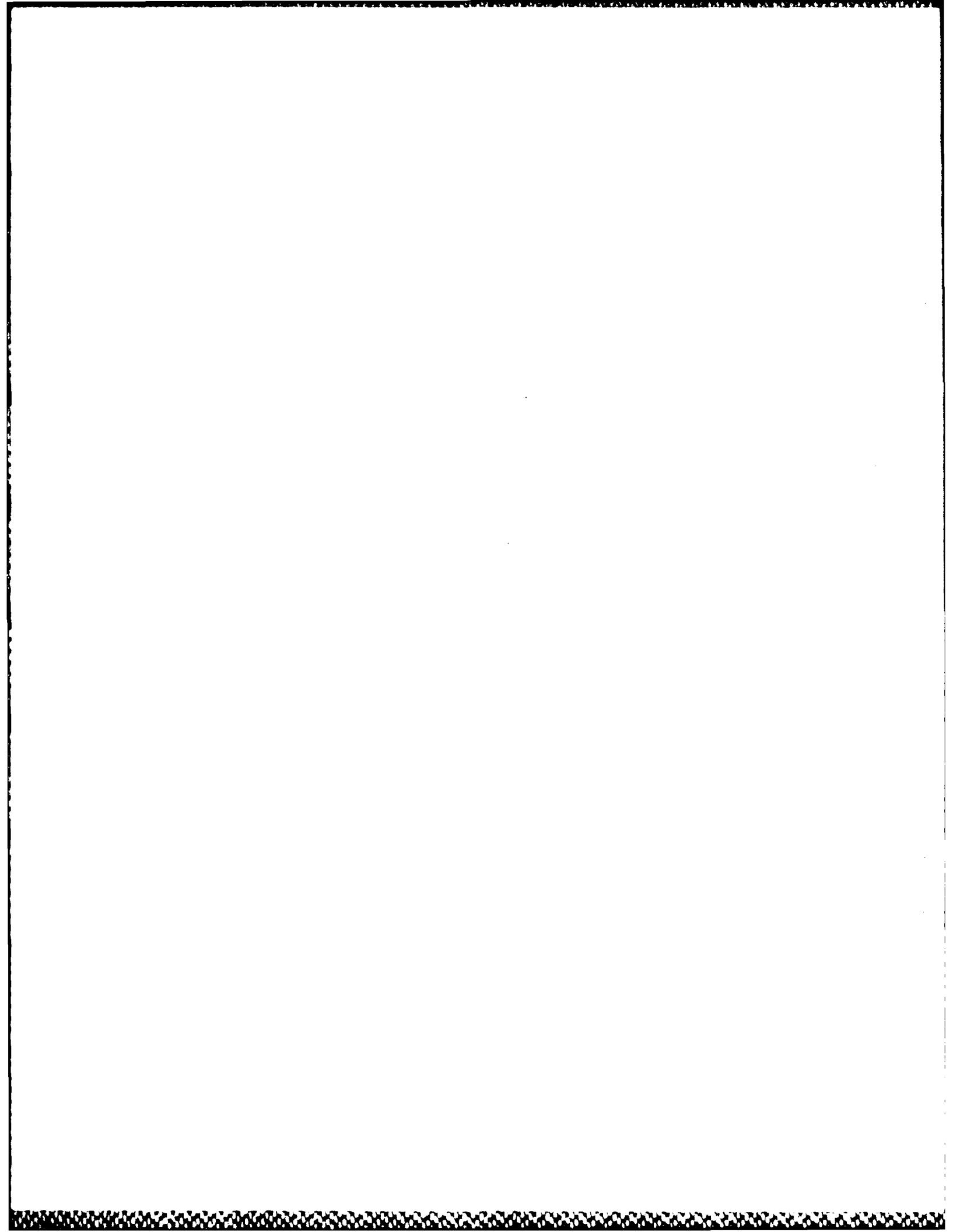
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<u>Contractors</u>	<u>ICAM Project</u>	<u>Contributing Activities</u>
Boeing Military Aircraft Company (BMAC)	1701, 2201, 2202	Enhancements for IBM node use. Technology Transfer to Integrated Sheet Metal Center (ISMC)
Control Data Corporation (CDC)	1502, 1701	IISS enhancements to Common Data Model Processor (CDMP)
D. Appleton Company (DACOM)	1502	IISS enhancements to Integration Methodology
General Electric	1502	Operation of the Test Bed and communications equipment.
Hughes Aircraft Company (HAC)	1701	Test Bed enhancements
Structural Dynamics Research Corporation (SDRC)	1502, 1701, 1703	IISS enhancements to User Interface/Virtual Terminal Interface (UI/VTI)
Systran	1502	Test Bed enhancements. Operation of Test Bed.

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SECTION 1

INTRODUCTION

This guide accompanies the Release 1.8 of IISS for installation on an IBM MVS computer. It provides the instructions for installing the IISS Network Transaction Manager (NTM) and Communications to a VAX computer running IISS.

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SECTION 2

NECESSARY HARDWARE AND SOFTWARE

The following system hardware and software should be sufficient for the installation and operation of IISS. It is possible that lower versions of some software may be sufficient.

- IBM 4341, 303X, or 308X
- 150 Cylinders 3330 Disk Space or equivalent
- 1600 BPI tape drive
- MVS/SP 1.3 or MVS/XA
- Assembler H Ver. 2
- COBOL VS R2.3
- 'C' Compiler
- ACF/VTAM Ver. 2

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SECTION 3

CONTENTS OF MAGNETIC TAPE

The format of the release tape for the IISS IBM is an ANSI labeled, 9-track tape written at 1600 bpi. It is a multi-file tape with each file having the format of an IEBUPDTE input data stream. Each file has a logical record length of 128 bytes with a blocksize of 2048 bytes.

At the present time all program source record length is 80 characters or less; therefore the installation JCL will truncate the 128 byte records to 80 byte records for the appropriate compilers.

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SECTION 4

INSTALLATION

(1) Create the following JCL and submit to download file 1 to disk from the tape. This file contains the JCL needed to continue the IISS installation.

```
//IISS JOB (ACCT,'IISS SYSTEM'),  
//    PRTY=07,CLASS=A,TIME=3,MSGCLASS=A  
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *  
//*          CREATE JCL BUILD DATASET  
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *  
//**REPLACE DATASET NAMES WITH YOUR INSTALLATION SPECIFIC NAMES*  
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *  
//DOWNLOAD PROC IISS-'IISS'.      * IISS SYSTEM HIGH LEVEL INDEX  
//                    R='R18',      * IISS RELEASE LEVEL  
//                    SUNIT='TAPE9',  * SOURCE TAPE UNIT NAME  
//                    SVOL='IISS16', * IISS TAPE VOLUME SERIAL NUMBER  
//                    DUNIT='3330',   * DESTINATION DASD UNIT NAME  
//                    DVOL='IISS01'  * DESTINATION VOLUME SERIAL  
//STEP1 EXEC PGM=IEBGENER,REGION=512K  
//SYSPRINT DD SYSOUT=A  
//SYSUT1 DD DSN=FOR007.DAT,DISP=(OLD,KEEP),  
//           LABEL=(1,AL),UNIT=&SUNIT,VOL=SER=&SVOL,  
//           DCB=(LRECL=128,BLKSIZE=2048,RECFM=FB,OPTCD=Q)  
//SYSUT2 DD DSN=&TEMP,DISP=(NEW,PASS),  
//           DCB=(LRECL=80,RECFM=FB,BLKSIZE=3120),  
//           SPACE=(CYL,(5,5),RLSE),UNIT=SYSSQ  
//STEP2 EXEC PGM=IEBUPDTE,REGION=256K,PARM=NEW  
//SYSPRINT DD SYSOUT=A  
//SYSIN DD DSN=&TEMP,DISP=(OLD,DELETE)  
//SYSUT2 DD DSN=&IISS..&R..BUILD,DISP=(NEW,CATLG,DELETE),  
//           DCB=(LRECL=80,RECFM=FB,BLKSIZE=3120),  
//           SPACE=(CYL,(5,5,20),RLSE),UNIT=&DUNIT,VOL=SER=&DVOL  
// PEND  
//STEP1 EXEC DOWNLOAD,R='R18',DUNIT='3380',  
//           SUNIT='TAPE9',SVOL='IISS16',DVOL='D80036'  
//STEP1.SYSIN DD *  
  GENERATE MAXFLDS=1  
  
  RECORD FIELD=(80)  
/*
```

The 'BUILD' dataset just created now contains the JCL necessary to install IISS. The user must modify the JCL to meet

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his installation specific requirements.

(2) It is first necessary to create the partitioned datasets (PDSs) that will contain the IISS source programs. This is done by submitting the member BLDSPDS of the BUILD dataset.

(3) Once the PDSs are built, the PDSs are loaded with the IISS source programs by submitting the member SRCLOAD.

(4) Submit member BLDLOAD to create source member load libraries that will be used for linking the source programs.

(5) Members IISSASM, IISSASR, IISSCOB, IISSCCX, IISSFOR, and IISSLNK are used by the compilation steps of the installation and must be installed into a system procedure library such as SYS1.PROCLIB.

(6) Member IHCPGEN of the IPC library identifies to IISS the VTAM application name for IISS Inter Host Communications and the terminal nodename of the communications link to the VAX. Modify this member to your installation specific VTAM names. Additional information may be found in the section titled 'Inter-Host Communications Installation'.

(7) All members of the BUILD dataset beginning with 'CL' are JCL to perform compilations of the IISS source code. These members may contain multiple JOB cards; therefore modification may be necessary.

- Submit member CLIPC18 to compile the IBM system primitive routines.
- Submit member CLCOMM18 to compile the communications application.
- Submit member CLNTM18 to compile the NTM programs.
- Submit member CLCDM18 to compile the CDMP utility programs.
- Submit member CLUI18 to compile the User Interface routines.

(8) Submit member FLCREAT to create the IISS runtime libraries.

(9) All member of the BUILD dataset beginning with 'LK'

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are used to link the source programs into the executable load modules.

- Submit member LKIPC18 to link the IBM primitives.
 - Submit member LKCOMM18 to link the communications application.
 - Submit member LKNTM18 to link the NTM Monitor, MPUs, AP services, and NTM test programs.
 - Submit member LKCDM18 to link the CDMP utility programs.
 - Submit member LKUII18 to link the User Interface programs.
- (10) Submit ALIAS to assign alias names to the generated load modules.
- (11) IISS requires approximately 20 cylinders of VSAM data space for its message queues and table overflow datasets. Define this data space to a VSAM catalog and modify members VSAMELD and VSAMCLR to point to this VSAM data space and catalog.
- (12) Submit VSAMELD to create the necessary VSAM runtime datasets.
- (13) Submit member FILINIT to install the default IBM IISS parameters into the runtime datasets.
- (14) Install member MSTRIIIS into a system procedure library. This JCL is used to run IISS.

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SECTION 5

OPERATION

IISS should now be started by issuing the following on a
MVS system console.

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SECTION 6

INTER-HOST COMMUNICATIONS INSTALLATION

For each remote host to be communicated with, you must code an additional IHCPGEN module. This module must be assembled and link-edited as reentrant. The name given to this module must match the terminal id or port-name the COMM uses to refer to this host. A VTAM application definition statement must be placed in your system's VTAMLST. The ACBNAME parameter must agree with the value of the APPLID parameter coded on the IHCPOR macro. The format of an APPL statement is:

REMHOST APPL AUTH=ACQ,ACBNAME=REMOTVAX

REMOTVAX is the value coded for APPLID on the corresponding IHCPOR macro.

The communications lines connecting each host must be defined and varied active prior to starting the inter-host link. The label on the LU parameter defined by your VTAM system programmer must match the value coded for the VTRESID parameter in the IHCPOR macro.

CODING OF THE IHCPOR MACRO.

Each communications link between two IISS systems will have a load module associated with it that will contain all the VTAM control blocks necessary to establish and maintain communications. This module will have the same name as the PORT-NAME in the COMM application. It is created by the 'IHCPOR' macro. The format of the IHCPOR macro is shown below.

IHCPORAPPLID=xxxx,TRMID=yyyy,VTRESID=zzzz,WAITV=nnnn,TFLAG=ff
where

APPLID is the name of the VTAM ACB name coded in the VTAM APPL statement. This application must be authorized to acquire terminals.

TRMID is the port-name passed by COMM to the Inter-Host Communications program to identify this module.

VTRESID is the VTAM LU name of the terminal definition associated with the port (i.e., the label on the VTAM LU macro

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that defines the port).

WAITV is the maximum time in 1/100 seconds that the IHC program will wait for a response from the port. The default value is 1000 or ten seconds. It should be noted that this timeout value only applies to waiting for replies from the port. When it is necessary to wait for VTAM to schedule an event, there is no timeout.

TFLAG is a option to specify terminal characteristics. Currently, only values of '00' or '80' are supported with '80' being the default. A value of '80' indicates whether the port will support VTAM data flow control request units (DFC RUs) and other characteristics of a terminal with a FM profile of 3 and a TS profile of 3. The default value will treat the port as a remote 3274 or 3276 SNA terminal and a value of '00' will treat it as a local, non-SNA 3270.

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SECTION 7

DATASET NAMING CONVENTION

Below are the default dataset names that will be created during installation of IISS release 1.8.

IISS.R18.BUILD	Installation JCL library
IISS.R18.LOADLIB	Program load library
IISS.R18.IISSCLIB	COBOL copy source library
IISS.R18.IISSHLIB	'C' include source library

IISS.R18.IPC	IPC source library
IISS.R18.NTM.MONITOR	NTM MONITOR source library
IISS.R18.NTM.MPU	NTM MPU source library
IISS.R18.NTM.TEST	NTM TEST source library
IISS.R18.NTM.SERVICES	NTM SERVICES source library
IISS.R18.UI.CLIB	'C' utility source library
IISS.R18.UI.DRIVER	UI/VTI terminal driver library
IISS.R18.UI.FPAI	UI/FP Appl. Inter. library
IISS.R18.CICS	CICS Interface source library
IISS.R18.CDM	CDMP Utility source library

All dataset listed between the rows of asterisks will have a load library created as well with a '.LOADLIB' concatenated to the dataset name.

IISS run time sequential datasets

IISS.R18.SYSGEN	System Initialization file
IISS.R18.NTMLLOG	Message Log
IISS.R18.ERRLOG	Error Log
IISS.R18.HSTTBLS	Host Status Table
IISS.R18.APCTBL	APC Status Table
IISS.R18.APITBL	AP Information Table
IISS.R18.APTBL	AP Characteristics Table
IISS.R18.CATTBL	Message Category Table
IISS.R18.DIRLBL	AP Directory Table
IISS.R18.LOGLBL	User Logon Table
IISS.R18.ACCTBL	Message Authority Check Table
IISS.R18.AUTLBL	Message Authority Table
IISS.R18.AGNTBL	Test Data Table
IISS.R18.MRIWTI	Waiting-To-Initiate Message Queue
IISS.R18.COIWTI	Waiting-To-Initiate Message Queue
IISS.R18.UIIWTI	Waiting-To-Initiate Message Queue

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IISS.R18.T1IWTI	Waiting-To-Initiate Message Queue
IISS.R18.OTHWTI	Waiting-To-Initiate Message Queue
IISS.R18.OTHDLQ	Message Delivery Queue

IISS run time VSAM datasets

IISS.R18.APOTBL	AP Operating Information Table
IISS.R18.APSTBL	AP Status Table
IISS.R18.CLDtbl	AP Child Table
IISS.R18.MPRTBL	Message Pair Table
IISS.R18.IATtbl	AP I'm Alive Table
IISS.R18.GDMGS	Guaranteed Delivery Message Queue
IISS.R18.GRDSTS	Guaranteed Delivery Message Status Table
IISS.R18.APCQUE	OFF-APC Message Queue
IISS.R18.APQUE	ON-APC Message Queue

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D T I C